

REMARKS

Claims 1-6 and 13-27 stand rejected under 35 U.S.C. §103 as being unpatentable over United States Patent No. 6,694,288 to Smocha et al. in view of United States Patent No. 6,470,464 to Bertram et al. Applicants respectfully traverse this rejection.

Applicants respectfully submit that the cited references fail to disclose or suggest all of the features of the present invention. More specifically, neither the Smocha et al. reference or the Bertram et al. reference, alone or in combination, disclose or suggest a load monitoring condition determination method that includes, *inter alia*, the step of “determining a load monitoring condition” utilizing all three of the following: (i) “the amount of load given to the computer system,” (ii) “the results of measuring the response or throughput,” and (iii) “the results of measuring the resource situation inside the computer system,” and the step of “performing load monitoring on only the load monitoring condition, or conditions, determined during the load monitoring condition determining step,” as defined in independent Claim 1. Similar features are also defined in independent Claims 5 and 21.

In the present invention, a load is provided to a computer system, and various parameters within the system are measured while the load is being provided. One of the objects of the present invention is to analyze the situation within the computer system, and to determine the most effective resource item(s) to be monitored, and to monitor only the resource item(s) determined to be most necessary to monitor. *See, e.g.*, Applicants’ Specification, page 5, paragraph [0017]. Thus, the present invention includes, *inter alia*, means for “determining” a load monitoring condition and means for “performing load

monitoring on only the load monitoring condition, or conditions, determined during the load monitoring condition determining step” (emphasis added). Applicants’ Figure 2 is a flowchart of the important features of the present invention, and includes the following three phases: Phase 1, the load test phase (including steps S10-S17): Phase 2, the load monitoring condition determination phase (including steps S18 and S19): and Phase 3, the load monitoring operation (including Steps S20-S23).

One of the claimed features of the load monitoring condition determining step is that such determination is made based on all three of the following: (i) “the amount of load given to the computer system,” (ii) “the results of measuring the response or throughput,” and (iii) “the results of measuring the resource situation inside the computer system,” as recited in independent Claims 1, 5 and 21. Applicants' Figures 3A and 3B show examples of the types of measurements that may be taken when measuring the resource situation within the computer. For example, the following measurements may be taken:

- %usr: CPU time for which it operated in a user mode
- %sys: CPU time for which it operated in a system mode other than remote
- %wio: Time for which it was not in an idle state
- %idle: Wait time for input-output completion
- sml_mem: Amount of available memory held in a small memory request pool
- alloc: Amount of memory allocated from the small memory request pool
- fail: Number of failures in allocation of small memory requests
- lg_mem: Amount of available memory held in a large memory request pool
- freemem: Number of memory pages available to a user process
- freeswap: Number of free swap pages
- %busy: Time spent on transfer request service by the apparatus
- avque: Average number of requests attached to a queue
- r+w/s: Number of reads and writes transferred to the apparatus
- blks/s: Number of blocks transferred to the apparatus

In contrast to the present invention, the system of the Smocha et al. reference fails to disclose or suggest that the load monitoring condition is determined based on all three of the following: (i) the amount of load, (ii) the results of measuring the response or throughput and (iii) the results of measuring the resource situation within the computer system, and that the load monitoring is performed on *only* the load monitoring condition(s) determined during the load monitoring determination step. Instead, the Smocha et al. reference merely discloses monitoring various parameters, and analyzing the results. Although the Smocha et al. reference does disclose that after analysis, certain parameters may be omitted from future tests (column 8, lines 48-53), the determination of the omission of certain parameters is because data from that parameter (or parameters) is constant (or near constant), and thus there is no strong correlation between the activity of the test and the monitored value. Such determination, which is based on a single factor, differs from the present claimed invention in which the determination is based on three factors (the amount of load, the results of measuring the response or throughput and the results of measuring the resource situation within the computer system).

In the April 30, 2007 Final Office Action (pages 9-10), the Examiner referred to various portions of the Smocha et al. reference. In response, Applicants will show the differences between the claimed invention and the relevant portions of Smocha et al. referred to by the Examiner. The Examiner referred to Column 8, lines 56-63 of Smocha et al. for the proposition that monitors producing uninformative results can be eliminated. However, when reading this section of Smocha et al. in the context of the remainder of the paragraph

(column 8, lines 48-53), it becomes clear that this section merely discloses eliminating, in future secessions, one or more monitors (where each "monitor" is a performance metric such as response time, the numbers of successful or failed transactions per second, or the total throughput (column 6, lines 46-53)) because the measurements obtained with that monitor are constant or nearly constant. Such a determination based on a single factor (constant data), differs from the claimed determination step based on three factors (the amount of load, the results of measuring the response or throughput and the results of measuring the resource situation within the computer system).

One example of a portion of the claimed determination process is represented by Applicants' Figures 5 and 6, where Figure 5 shows the results for a variety of monitored items (such as %usr, %sys, %wio, etc.) for several resource items (such as CPU, memory, I/O) for each of the different servers when applying three different loads (where load (test a) < load (test b) < load (test c)), and Figure 6 shows a summary of the three load tests (a through c) for server B. A review of Figure 5 shows that, in general, server B is responding better than the other two servers (servers A and C). Additionally, assuming, for example, that the resource item with the highest rate of change is determined as the resource item to be monitored, Figure 6 shows that the item "lg_mem," with a rate of change of 6.23 has the highest rate of change, and therefore, for this example, "lg_mem" (the amount of available memory held in the large memory request pool) for server B will be included in the condition being monitored. Further, Figures 7-9 show examples of how the amount of load and the response and/or the throughput can be used to determine the threshold value, which is also

part of the claimed load monitoring condition. Thus, as can be seen from a review of Figures 5-9, and the associated discussion in Applicants' Specification, the determination of the load monitoring condition (lg_mem for server B and its threshold value, in this example) relies upon all three claimed factors (the amount of load given to the computer system, the results of measuring the response or throughput, and the results of measuring the resource situation).

Such a process differs from that described in Column 8, lines 56-63 of Smocha et al., which only relies upon a single factor for eliminating a monitor (constant data). Additionally, the Bertram et al. reference does not remedy this defect. Accordingly, as all of the features of independent Claims 1, 5 and 21 are not disclosed or suggested in the cited references, Applicants respectfully request the withdrawal of this §103 rejection of independent Claims 1, 5 and 21 and associated dependent Claims 2-4, 6, 13-20, and 22-27.

The Examiner also referred to Column 8, lines 29-31 and Column 12, lines 42-44 of Smocha et al. for the proposition that the Smocha et al. reference teaches which value should be a criterion for monitoring. However, Column 8, lines 29-31 do not discuss determining a criterion for monitoring *in the future*, but instead relate to eliminating certain values within a set of data that *has already been collected*, where the particular values are either meaningless or incorrect (such as percentage values less than zero or greater than 100). Similarly, Column 12, lines 42-44, of the Smocha et al. reference also deal with data that has already been collected (the analysis module . . . determines what segments of the available data may be significant (240) and useful for further correlation analysis (250)"). Further, although lines 44-47 discuss that additional data may be needed, there is no disclosure or

suggestion that such data should be collected in the future, only that the data can be requested from the appropriate repositories. Accordingly, these sections of the Smocha et al. reference does not remedy the deficiency noted above.


Finally, the Examiner also referred to Column 12, lines 1-6 of Smocha et al. for telling which item is to be monitored. However, this portion of the Smocha et al. reference refers to the analysis of items being monitored, not to a determination of which items should be monitored in the future. More specifically, this section states that "the analysis module 190 enables the user to more easily identify those aspects of the server 110 and system as a whole which appear to have an effect upon performance *as measured* by the monitored values" (emphasis added). Thus, this section of Smocha et al. merely discusses the analysis of data already collected, but does not provide any suggestions of what data should be collected in the future. Accordingly, this section of the Smocha et al. reference does not remedy the deficiency noted above either. Thus, as discussed, the cited references fail to disclose or suggest all of the features of independent claims 1, 5 and 21. Accordingly, Applicants respectfully request the withdrawal of the §103 rejection of independent Claims 1, 5 and 21 and their associated dependent claims.

For all of the above reasons, Applicants request reconsideration and allowance of the claimed invention. Should the Examiner be of the opinion that a telephone conference

would aid in the prosecution of the application, or that outstanding issues exist, the Examiner is invited to contact the undersigned attorney.

Respectfully submitted,

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